CLAIMS

What is claimed is:

1. A method of communication comprising: the steps of:

a. coding an input signal into a coded output signal;

b. transmitting said coded output signal to at least one receiver;

c. receiving said coded output signal with at least one spike ? burster and converting said coded output signal into spike bursts;

d. converting the said spike bursts into an output signal corresponding to said input signal.

2. The method according to claim 1, wherein said coded output signal includes at least one of amplitude modulation, frequency modulation, or phase modulation.

3. The method according to claim 1, wherein said coded output signal may be transmitted via at least one of wired and wireless transmission.

4. The method according to claim 1, wherein each said at least one spike burster is a nonlinear oscillator.

5. The method according to claim 4, wherein said spike burster ? includes at least one activation region and one deactivation region.

6. The method according to claim 5, wherein said at least one activation region and one deactivation region cause said spike bursts.

7. The method according to claim 6, wherein said spike bursts comprise spikes and non-spikes.

8. The method according to claim 7, wherein said spikes correspond to said activation region and said non-spikes correspond to said deactivation region.

9. The method according to claim 1, wherein said converting utilizes a summing operational amplifier.

10. A method of increasing bandwidth efficiency in a quadrature amplitude modulation system having a plurality of quadrature points, comprising:

(a) determining a phase angle and an amplitude of a plurality of quadrature points; and

(b) deriving a plurality of orphan quadrature points by at least one of (i) selecting non-quadrature points sharing at least one of the same phase angle and the same amplitude as a quadrature point, and (ii) selecting non-quadrature points having a phase angle not defined by a quadrature point but comparable to the phase angle difference between quadrature points having different adjacent phase angles and having amplitudes comparable to said quadrature points.

11. The method of claim 10 wherein said amplitude $\mathrm{sqrt}(a_i^2+b_j^2)$ and phase $\tan^{-1}(b_j/a_i)$ are located according to the following expression:

$$s(t) = (\mathrm{sqrt}(a_i^2 + b_j^2)(\cos(\omega t - \tan^{-1} b_j/a_i)),$$

wherein the in phase component is a_i and the quadrature component is b_j according to the following expression:

$$s(t) = a_i \cos\omega t + b_j \sin\omega t.$$

12. A method of increasing bandwidth efficiency in an amplitude-phase modulation system, comprising:

(a) defining an amplitude-phase constellation as a plurality of generally equally spaced apart phase rays having a generally uniform phase angle, said phase rays orthogonally separated by a plurality of generally uniformly spaced apart amplitude rings; and

(b) deriving a plurality of amplitude-phase state points relative to the intersections of said phase rays and said amplitude rings.

13. The method of increasing bandwidth of claim 12, wherein said amplitude-phase constellation has at least four phase rays and at least two amplitude rings.

14. The method of increasing bandwidth of claim 12, wherein said amplitude-phase state points are derived according to the following expression:

$$s(t) = (\mathrm{sqrt}(a_i^2 + b_j^2)(\cos(\omega t - \tan^{-1} b_j/a_i)),$$

wherein the in phase component is a_i and the quadrature component is b_j according to the following expression:

$$s(t) = a_i \cos\omega t + b_j \sin\omega t.$$